

REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1-18 are pending, claims 1,4, 5 and 6 having been amended, claims 17-18 having been added and claims 8-16 having been withdrawn from consideration.

The Examiner objected to the specification because an abstract of the disclosure was not provided on a separate sheet. By this amendment, an abstract of the disclosure is provided on a separate sheet. Therefore, Applicants respectfully request the objection be withdrawn.

The Examiner objected to claims 1 and 4-6 due to informalities, which the Examiner listed on pages 3 and 4 of the Office Action. The claims were amended to address the informalities. Therefore, Applicants respectfully request that the objection be withdrawn.

The Examiner rejected claims 1-7 under 35 U.S.C. 103 (a) as allegedly being unpatentable over U.S. Patent No. 5,583,869 to Grube et al. (Grube) in view of U.S. Patent No. 5,719,859 to Kobayashi et al. (Kobayashi). Applicants respectfully traverse the rejection.

Claims 1-4 recite a method of assigning time slots within a TDMA frame of a frequency channel to a plurality of calls between a base station and one or more mobile terminals, the method comprising determining which of the plurality of calls are real-time calls requiring allocation of a plurality of time slots in the TDMA frame. Similarly, claims 5-7 recite an apparatus for assigning time slots within a TDMA frame of a frequency channel to a plurality of calls between a base station and one or more mobile terminals, the apparatus comprising means for determining which of the plurality of calls are real-time calls requiring allocation of a plurality of time slots in the TDMA frame.

Grube provides a method for dynamic allocation of wireless communication resources within a TDM wireless communication system. The Examiner did not identify any portion of Grube that discloses the step of determining which of the plurality of calls are real-time calls requiring allocation of a plurality of time slots in a TDMA frame, as recited in claims 1-4 or means for determining which of the plurality of calls are real-time

calls requiring allocation of a plurality of time slots in a TDMA frame, as required in claims 5-7. Further, the Examiner did not identify any portion of Kobayashi that discloses the above limitations.

Instead, the Examiner merely identified data messages as real-time calls and voice messages as non-real-time calls. Claims 1 and 5 are not limited to specific examples of "real-time" and "non real-time" calls; however, it is clear from the specification, on page 22, lines 13-17 that a voice call is an example of a real-time call. Therefore, the Examiner's interpretation is contrary both to the meaning of "real-time" and the intended meaning in this context.

In fact, Grube, at Column 4, lines 23-24, discloses that voice calls require only one wireless communication resource, i.e. one slot per frame.

Further, claims 1-4 require allocating the time slots in the frame to the real-time calls such that the plurality of time slots allocated to each of the real-time calls are mutually spaced apart in the TDMA frame in the frequency channel. Similarly claims 5-7 require means for allocating the time slots in the frame to the real-time calls such that the plurality of time slots allocated to each of the real-time calls are mutually spaced apart in the TDMA frame in the frequency channel. As the Examiner pointed out on page 6 of the Office Action, Grube does not disclose that the plurality of time slots allocated to each of the data messages are mutually spaced apart in the frame. Grube is not concerned with the allocation pattern within a frame, but only in providing the required bandwidth based on the system grade of service (Column 3, lines 1-4) and meeting an overall desired time threshold for the transfer of large files (Column 4, lines 25-29). Thus, Grube does not teach or suggest a problem addressed by the present invention, as described on page 22, line 16 through page 23, line 15 of the specification that the delay of real-time calls can be affected by the allocation pattern within a frame. The delay mentioned by Grube, at Column 4, lines 24-29, relates to the overall time taken to transmit a non real-time time data file, rather than the inter-slot delay for real-time calls as addressed by the present invention.

Kobayashi is similarly concerned with assigning multiple slots in order to handle a large quantity of non real-time time data, rather than a real-time call (see Column 11, lines 55-57). Furthermore, as the Examiner notes, Kobayashi discloses that the plurality

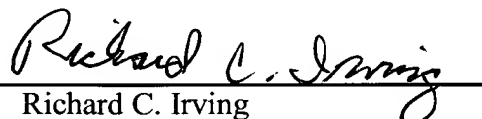
of time slots allocated to a data message are adjacent to each other. The Examiner attempts to avoid the significance of this feature by treating it merely as an example, and postulating that a slight modification of Kobayashi would be needed to space apart the time slots assigned to the same call in a frame. However, in the context of a data call, there are good reasons why one would want to use adjacent slots; for example, the receiver can receive data continuously across two slots and does not need to be switched on and off again twice in the same frame. It is only the present inventors' recognition of a problem associated with real-time calls, and the desire to reduce maximum inter-slot delay, which provide the reason for spaced apart time slots allocated to a real-time call within a frame.

New claims 17-18 are patentable over Grube and Kobayashi, at least for the reasons discussed above regarding claims 1 and 5, from which claims 17 and 18 depend, respectively.

All rejections and objections having been addressed, Applicants submit that the application is in condition for allowance and a Notice to that effect is earnestly solicited. If any questions remain, the Examiner is invited to contact the undersigned to further prosecution.

The Patent Office is authorized to charge any fees under 37 C.F.R. § 1.16 and 1.17 which may be required during the pendency of the application, other than the Issue Fee, to Deposit Account No. 19-0773.

Respectfully submitted,


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MARKED-UP VERSION OF AMENDMENTS

1. (Amended) A method of assigning time slots within a TDMA frame of a ~~TDMA~~ frequency channel to a plurality of calls between a base station and one or more mobile terminals, said calls being either real-time calls or non real-time calls and comprising at least one real-time call requiring a plurality of time slots per frame; the method comprising:

determining which of said plurality of calls are real-time calls requiring allocation of a plurality of time slots ~~per~~ in said TDMA frame; and

allocating said time slots in said frame to said real-time calls such that the plurality of time slots allocated to ~~the or each of~~ of said real-time call are mutually spaced apart in said TDMA frame in said frequency channel.

4. (Amended) A method as claimed in any preceding claim, further comprising allocating one or more time-slots to each of said non-real-time calls from the time slots in said frame not allocated to ~~the or each of~~ of said real-time calls, ~~the a~~ number of said time slots allocated to said non-real-time call being variable during said non-real-time call according to a current bandwidth allocation determined for ~~that said~~ non-real-time call.

5. (Amended) Apparatus for assigning time slots within a TDMA frame of a ~~TDMA~~ frequency channel to a plurality of calls between a base station and one or more mobile terminals, said calls being either real-time time calls or non real-time time calls which have less sensitivity to delay than real-time time calls and comprising at least one real-time call requiring a plurality of time slots per frame; the apparatus comprising:

means for determining which of said plurality of calls are real-time calls requiring allocation of a plurality of time slots ~~per~~ in said TDMA frame; and

means for allocating said time slots in said frame to said real-time calls such that the plurality of time slots allocated to ~~the or each of~~ of said real-time time calls are mutually spaced apart in said TDMA frame in said frequency channel.

6. (Amended) Apparatus as claimed in claimed 5, wherein said means for allocating are further arranged to allocate one or more time-slots to each of said non-real-time time calls from the time slots in said frame not allocated to ~~the~~ or each of said real-time calls, ~~the~~ a number of said time slots allocated to said non-real-time call being variable during said non-real-time call according to a current bandwidth allocation for ~~that~~ said non-real-time call.

New claims 17 and 18 were added.